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JOHN E. FLETCHER AND B. ANTHONY STEWART

THE MILLS OF PITTSBURGH, WORLD'S NUMBER-ONE PRODUCER OF STEEL (Bulletin No. 4), MANTLE THE PENNSYLVANIA SKIES WITH A DENSE AND DARKENING SMOKE SCREEN

Bulletin No. 1, February 23, 1953

Netherlanders Battle Age-Old Foe—the Sea

THE sea is always knocking at the Netherlands' door, and sometimes, like a thief in the night, it walks in uninvited.

The unwanted guest pushed through the dikes during the catastrophic storm early this month. Salt water buried big stretches of the 2,000 square miles that doughty Netherlanders had wrested from the sea during seven centuries of drudging toil. The storm was rated as one of the worst in lowlands history.

Spade Ranks with Sword as Defense Weapon

But long conditioning in fighting the sea had disciplined the Dutch to rally as a nation against flood. Thousands seized spades and rushed to man the dikes when they began crumbling. Once again, as in the legend of the boy at the dike, the puny but unflinching strength of man was pitted against the might of the ocean. The storms finally abated, the pumps worked night and day to expel the flood, and the lowlanders began reclaiming their sodden territory.

The spade has always ranked with the sword as a weapon of defense in Holland. Even in turbulent medieval times all quarrels were dropped on pain of death before the common need to fight water. "Dike or Depart" once meant that any man unable to mend his section of dike must, under the stern Law of the Spade, release his farm to one who could.

Ever since the ancient Frisians built their marshland homes on mounds, the lowlanders have been perfecting their knowledge of water control through the use of sand, clay, willow matting, and imported stone; and by incessant pumping, dredging, and draining.

Over the centuries a billion cubic yards of earth, equalling the earth displacement of ten Suez Canals, have been moved to protect and drain the largely handmade, machine-maintained lowlands. When the recent storms began, 1,500 miles of dikes guarded the hard-won Netherlands soil. Fortresslike earthworks linked 200 miles of natural sand dunes to repel the sea along the coast (illustration, inside cover), and other dikes lined rivers and estuaries, but the storm breached them repeatedly.

Windmills Pump out Unwanted Water

More than one fourth of the Netherlands lies below sea level and many more areas are only a few feet above it. When the west wind drives the English Channel water to meet water deflected by Norway's coast, the North Sea seeks its old course across the Hollow Land. Half of the country would be subject to flooding if no dikes and dunes protected it.

High tides and winter storms raise the water level to heights equalling the second stories of Amsterdam houses, and water slaps at dike banks many feet above peaceful, prosperous farms. Machinery and dikes maintain the country. Windmills and engine-driven pumps run ceaselessly to keep seepage from turning fields into marshland.

More than a score of storms and floods have engulfed the Netherlands

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ROYAL DUTCH AIR SERVICE

TWICE IN A DECADE WALCHEREN'S DIKES HAVE BEEN BREACHED, RUINING FARMS WITH SALT WATER

Most of Walcheren Island lies below sea level, protected in normal times by its leveelike bulwarks of dikes and dunes. In the closing phases of World War II, the Germans tried a last stand there because the island blocked Allied use of much-needed port facilities at Antwerp. British bombers broke the dikes late in 1944, flooding out the enemy. Drained and laboriously restored to cultivation after the conflict, the fields once more have been poisoned by the salt of a sea gone wild.

Bulletin No. 2, February 23, 1953

Supermarkets Threaten Mexico's "Mercados"

WHAT would Montezuma say? Supermarkets in his Aztec capital! Yes, Mexico City now has 13 of them, several more have opened in provincial cities, and others are planned. This innovation of self-service is part of the streamlining program linked with the country's campaign for economic expansion.

A Blow to Marketing Tradition

Marketing in Mexico has always been a social as well as a buying matter, so the new stores represent something of a revolutionary departure, even though they are reported to be proving quite popular.

Mexico's markets, or *mercados*, have long been a colorful attraction for visitors in numerous towns and villages. Perhaps the most celebrated are the adjoining Lagunilla and Tepito markets in the capital. They sprawl over a dozen blocks in the northeast section of the city.

Politics, pleasantries, comments on the weather have been considered part and parcel of the talk shoppers make. Tradition has it that the sellers enjoy bargaining with customers in long conversations and would be secretly disappointed if their wares were bought at the price asked, without haggling.

Grumpy customers, particularly when they are tourists, do not make a small market merchant happy. A curt take-it-or-leave-it offer of less than the amount asked often may bring an anxious reply such as "No, no! give me another price, one with more good feeling in it!" Shoppers with good-humored smiles are preferred.

Big Industry; No Smokestack

Since the close of World War II, the land of the Aztecs has become an increasingly popular resort for tourists, most of them from the United States. Last year they spent about $300,000,000 in the nation south of the Rio Grande, which explains why Mexicans speak of the tourist trade as their "industry without a smokestack." The sum is substantial, for it equals almost half the income Mexico realized from exports in 1952.

To attract more visitors and thus make friends, Mexico has been busy oiling the wheels of travel. Airfields and service facilities have been improved. Bumpy railway roadbeds have been relaid and sleek Diesel trains bought to replace old-fashioned ones. Special attention has been given to bettering highways and to building new roads.

Many vacationists come in the family car and the new roads enable them to see more of the country. Comfortable long-distance busses, so familiar in the United States, now travel all the main routes.

Motorists who pause at a mercado in the rural area will realize what an important institution they represent to the people. A great many of them are open-air marts, with perhaps a few stalls. *Serapes*, farm products, pottery, baskets, and other native handicraft are set out for the buyer to inspect—and bargain for. A gay atmosphere prevails, because in the country going to market still remains something of an adventure. Often music enlivens the scene.

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since the Middle Ages, killing as many as 40,000 people in a single day. The worst disasters were the great floods of 1228, 1421, 1521, and 1646, each of which took some 100,000 lives. In more recent times serious dike breaks occurred in 1825, 1894, and 1916.

Water, strangely enough, has been a loyal ally to the Dutch as well as a bitter foe. Opened dikes brought the Prince of Orange's barge navy to save besieged Leiden from the Spaniards in 1574; flooded fields kept the French out of Amsterdam in 1672. Netherlands flood-defense plans proved futile, however, against Hitler's 1940 blitzkrieg.

Although World War II salt-water damage was less than had been feared, the Netherlands suffered proportionately more during the war than any other western European nation. It had made such a spectacular recovery, however, that it was able to decline American aid for the coming year—only to have the devastating storms strike a few days later.

NOTE: The Netherlands is shown on the National Geographic Society's map of Western Europe. Write the Society's headquarters, Washington 6, D. C., for map price list.

See also, "Mid-Century Holland Builds Her Future," in *The National Geographic Magazine* for December, 1950; "Mending Dikes in the Netherlands" (20 photographs), December, 1946; "Holland Rises from War and Water," February, 1946; and "Behind Netherlands Sea Ramparts," February, 1940; and in the GEOGRAPHIC SCHOOL BULLETINS, April 21, 1952, "Netherlands Queen Heads Ancient House"; and "Rotterdam Works Its Way out of War's Ruins," January 21, 1952. *(Back issues of the Magazine may be obtained by schools and libraries at a special discounted price of 50¢ a copy, 1946-to date; 90¢, 1930-1945; $1.90, 1913-1929. Earlier issues at varied prices.)*

© K.L.M. ROYAL DUTCH AIRLINES

THE SEA (background) FLOODED TIDY FIELDS AND GREENHOUSES LIKE THESE NEAR THE HAGUE

Bulletin No. 3, February 23, 1953

Melodies Mean Words to Men on Canary Islands

ACROSS the steep volcanic mountain sides of Gomera, one of Spain's Canary Islands, men communicate with each other by whistling. Their strange language matches the musical technique of the canary, the singing bird of the island group.

For centuries, the people of the little island off the northwest coast of Africa have used one of the world's most unusual languages. Theirs is no ordinary whistling but a clear, rippling sound much like the song of a nightingale. It makes it possible for the islanders to communicate over distances of several miles.

Old Chronicle Calls Islanders Tongueless Exiles

Anthropologists who have studied the whistle language say that it is unique among man's methods of communication. They have detected varying tones, rhythms, and inflections. Sometimes the sounds are soft and melodious, sometimes sad, and sometimes shrill and imperious. Yet no one knows how or when this human bird talk began.

In a 15th-century chronicle is found this explanation: "The country (Gomera Island) is inhabited by people who speak with their lips as if they were without tongues, and it is said that a great prince for no fault of theirs had them put into exile and had their tongues cut out."

It is more probable that the language arose because of the crumpled topography of the islands. On Gomera, deep canyons called *barrancos* furrow the island from the mountains to the sea. Across these steep-sided gorges, the earliest inhabitants of the island must have found it easier to communicate by whistling than by shouting, and a whistled code gradually developed into a practical language.

Of course the whistlers *do* have tongues, which they combine with lips and fingers to produce the sounds. Each has his own style. The whistled words and sentences traverse the valleys above the sighing of the trade winds. Along shore, whistled conversation can be heard above the roar of the surf as it pounds against the lava cliffs.

Birds Were Named for the Islands, not Islands for Birds

The bird talk is handy in more ways than one. Until recently, it enabled Gomera herdsmen to pay taxes only when they wished. Warning of a tax collector's arrival was whistled from one end of the island to the other. The unlucky official then found himself refused board and lodging for what appeared to be flimsy reasons. Often he returned empty handed to the boat which had brought him out to the island.

Strange as it may seem, the Canary Islands were not named for the small singing bird. On the contrary, the canary bird (which belongs to the finch family) took its name from that of the islands. "Canary" as a place name can be traced to an extinct species of huge dog found there by the early explorers. The Latin word for dog is *canis*. The islands were known also as the *Insulae Fortunatae*, for early geographers considered them the "Isles of the Blest" mentioned in mythology.

Others thought the islands were the remnants of the legendary con-

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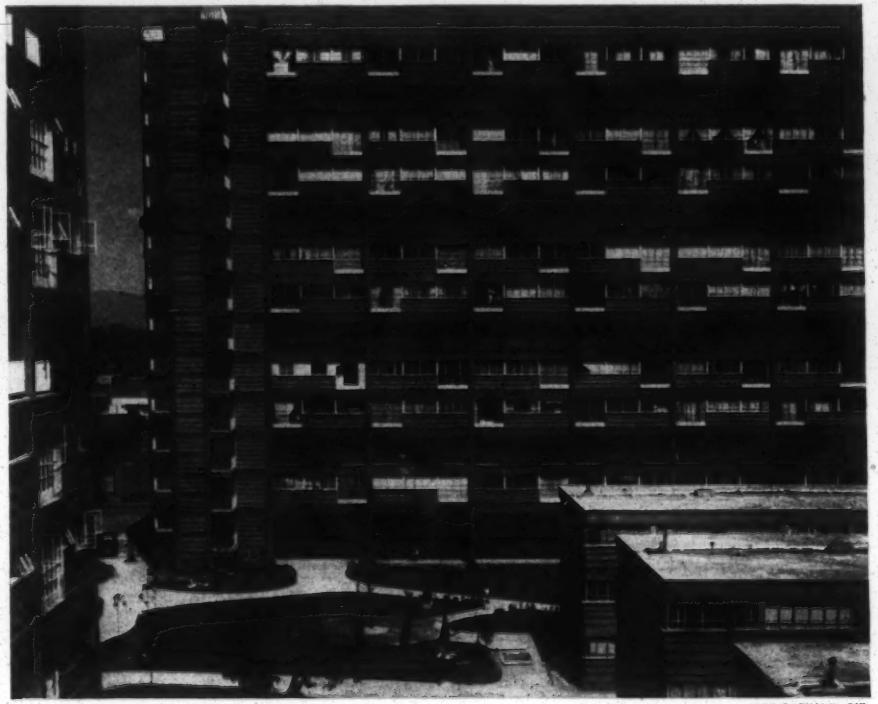
What Mexico's increasing modernization and motorization will mean for the old-style mercado is unpredictable. When the motor era began gaining momentum in the United States, numerous cities had their open-air markets to which farmers drove their wagons to sell their wares. These started disappearing decades ago. Perhaps, because of the spirit of the people, the mercado will prove more durable.

There is one portent of change, however, in development of farm-to-market roads. One such stretch of 35 miles near Guadalajara brought a jump in the area's tomato production from 3,000 to 2,000,000 cases a year. At least some mercados seem due for growing pains, but vacationists who find them so fascinating can hope they will always be as much fun.

NOTE: Mexico is shown on the Society's map of Countries of the Caribbean.

For additional information, see "Lost Kingdom in Indian Mexico," in *The National Geographic Magazine* for October, 1952; "Mexico's Booming Capital," December, 1951; "From the Halls of Montezuma" (21 color photographs), February, 1944; "On the Cortés Trail," September, 1940; "In the Empire of the Aztecs," June, 1937; "Modern Progress and Age-Old Glamour in Mexico," December, 1934 (out of print; refer to your library); and "North America's Oldest Metropolis," July, 1930.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, October 22, 1951, "Mexico City Is Continent's Third Largest."



JOHN GUTMANN, PIX

NORTH AMERICA'S OLDEST METROPOLIS IS RAPIDLY ASSUMING A MODERN APPEARANCE

This apartment development, built for Mexico City's government employees and named in honor of former President Alemán, emphasizes the unadorned vertical lines of 20th-century architecture. The supermarket, another modern institution—popular in the United States—is making headway in the Mexican capital. The new structures are a far cry from the ornate buildings of the Conquistadores who laid out the city in 1521 on the site of Montezuma's Aztec seat of government.

Bulletin No. 4, February 23, 1953

Damascus Steel Work Surpassed by Modern

THE steel of the famous Damascus blade that flashed in the sun of Bible lands against the Crusaders of the Middle Ages was the best of its day. Nevertheless, it is greatly excelled by the product of modern steel makers (illustration, cover).

The alloy from which the craftsmen of Damascus fashioned their weapons was composed of iron and carbon. These ingredients were laboriously smelted and the results of the mixture varied in properties as greatly as does natural ore.

Barred the Way to Jerusalem

Modern steel results from a mixture of iron with metals of which the people of ancient times never dreamed. It can be produced in any strength required, and in unvarying quality. It surpasses the Damascene product in strength, pliability, and in its ability to retain a sharp edge.

Saracens wielding Damascus blades successfully barred the road to Jerusalem, goal of zealous crusading knights from Christian Europe. It was not until modern times, when the rifle had replaced the sword, that the Holy City passed into Christian hands. In December, 1917, during the first World War, it fell to the British General Allenby after a short siege.

The steel of which early Damascus blades were made—the *wootz* of Hyderabad, which Marco Polo called *ordanique*—was brought from India by camel caravan and dhow. In the bazaars of Damascus and other cities of the Near East skilled armorers fashioned it by hand into graceful and effective weapons.

These artisans took thin strips of Indian steel and baser iron and bound them together. They fused them by heating and pounding. They added other strips and repeated the process, patiently and without attention to the many hours it took, until at last they were satisfied. Then the craftsmen etched a design into the curious watered pattern of the steel, added a delicatedly ornamented handle, and ground the edge of the blade to the keenness of a razor.

May Be World's Oldest Living City

The armorer's list of instructions inscribed on parchment was unearthed in the 19th century at Tyre. The ancient script indicates that there may have been gruesome performances to test the swords turned out for rulers and high officers. The blade, according to the parchment, should be tried against a slave bound to a block. The final test was its ability to lop off the head of the unfortunate at one stroke, without any untidy nicks.

Damascus, capital of the new independent Republic of Syria, lies 50 miles southwest across the Lebanon and Anti-Lebanon mountains from Beirut, capital of Lebanon. When Damascus was founded no man knows, but it is generally considered to be the oldest inhabited city on earth.

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tinent of Atlantis. The group consists of seven moderate-sized islands and six uninhabited islets. The mild climate and fertile volcanic soil produce such a variety of plants from both torrid and temperate zones that the islands are a botanist's paradise.

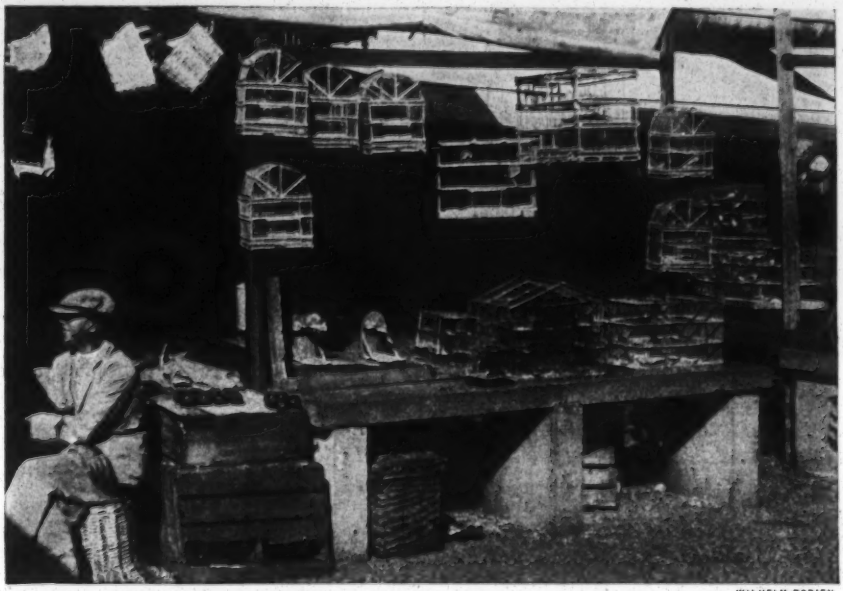
Great numbers of birds also add to the islands' charm. In addition to the little feathered singer whose name is so closely associated with the islands, native birds include the owl, blackbird, house swallow, quail, and chaffinch. Birds native to Africa often stop at the Canaries.

When the Spaniards conquered the islands from the aboriginal Gaunche people in the 15th century, they heard the natives communicating with each other by whistling. When Columbus landed at San Sebastian on Gomera on his way to the New World, he may have heard the unique music.

Since then, the Guanche whistling language has been translated into Castilian, the spoken language of the Spaniards. Today the Spanish inflections can be recognized in the whistled notes. The Guanches as a separate people have long since disappeared, but their curious and unique method of conversation lives in the whistling of their successors.

NOTE: The Canary Islands may be located on the Society's map of Africa.

See also, in *The National Geographic Magazine* for May, 1930, "Hunting for Plants in the Canary Islands."



WILHELM TOBIEN

IN A LAS PALMAS MARKET, CAGES OF CANARIES, NAMESAKES OF THE ISLANDS, AWAIT BUYERS

The little songsters of the Spanish archipelago off Africa's coast are green in color. The better-known yellow variety are raised in the Harz Mountains of Germany.

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Andes Offer Explorers Many Unscaled Peaks

MOUNTAIN climbers from all parts of the world are moving in on South America's Andes range, one of the few remaining frontiers challenging the hardy adventurers who thrive on the thin air of high altitudes.

No other mountain system can equal the length of the Andes, and only the Himalayas of central Asia have higher peaks. The massiye South American range towers above the warm Caribbean Sea in the north and extends some 4,500 miles to the frigid Antarctic waters into which Patagonia frays out at the southernmost tip of the continent.

Peaks Have Varied Approaches

Political considerations make the approach to many of the Himalayan peaks difficult if not impossible at the present time. On the other hand, the nations of South America eagerly welcome travelers and are constantly improving transportation to different sections of the long mountain system. A Swiss guide could leave his Alpine heights by plane on a Tuesday night and be preparing to lead a party up the Andes in Chile on the following Thursday afternoon.

Once in South America, however, the climber might find formidable physical obstacles in his way. Over their great length the Andes present almost every type of approach. Easy slopes beckon in temperate climates such as Argentina's. Long, difficult ascents through rain-soaked tropical jungles lie in Brazil and Colombia. Elsewhere, desert-dry rocks and sand, and glacier-choked valleys baffle the climber.

Another drawback is the hostility of some of the Indian tribes who live along the mountain slopes. An expedition seeking the summit of Ecuador's El Sangay—most active of South American volcanoes (illustration, next page)—planned its route to avoid the Jívaro country. These tribesmen are likely to use strangers as targets for blowgun darts tipped with curare, a deadly poison.

Mount Aconcagua Hemisphere's Highest Peak

The even more savage Awishira are another native menace to the peaceable climber. Three of these mountain-dwellers once attacked and drove away a construction gang of nearly 100 men who were building an airfield for an oil company in Ecuador.

There are more then 40 peaks in the Andes that top 20,000 feet. The greatest of these is Mount Aconcagua, highest mountain in the western hemisphere. It rises in west-central Argentina near the Chilean line. Aconcagua's snow-capped summit reaches 23,081 feet toward the blue Andean sky 100 air-line miles east of the Pacific coastal city of Valparaiso, Chile. It overlooks 12,795-foot Uspallata Pass where the famous statue, Christ of the Andes, stands guard over travelers.

Since Mattias Zurbriggen, a Swiss guide, first climbed Aconcagua in 1897, dozens of parties have achieved the frosty summit of the mountain monarch. During the last week in January, three separate parties reported having made the ascent. An Argentine army officer was the first

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The location of Damascus at the crossroads between East and West has brought it both commerce and war. The residents of Damascus have needed good weapons from time immemorial. Its streets have echoed to the conquering tread of Israelites, Assyrians, Macedonians, Egyptians, Romans, Crusaders from western Europe, Mongol hordes from the East, the Turks who ruled for four centuries, and the French who were in power until 1941 when Syria was proclaimed independent.

The Roman Emperor Diocletian (A. D. 245-313) was one of the prominent early patrons of the armorers of Damascus. The industry flourished for more than 1,000 years, until Tamerlane (Timur), the Mongol conqueror, swept in from the East at the closing of the 14th century, and captured the smiths. Modern successors of those ancient artisans are goldsmiths, silversmiths, and craftsmen who fashion articles intricately inlaid with wood, brass, and copper.

NOTE: Damascus may be located on the Society's map of Bible Lands and the Cradle of Western Civilization.

For further information, see "Pittsburgh: Workshop of the Titans," in *The National Geographic Magazine* for July, 1949; "Steel: Master of Them All," April, 1947; "Syria and Lebanon Taste Freedom," December, 1946; and "Metal Sinews of Strength," April, 1942 (out of print; refer to your library).

WILLARD R. CULVER

STEEL, "MOST USEFUL AND MOST FATAL INSTRUMENT," CONTRIBUTES TO BOTH WAR AND PEACE

Twenty centuries ago the Roman author Pliny thus described steel. Modern invention has increased its fatality and its utility, making warfare more violent, and housekeeping less burdensome. Processed so that flames and fluids cannot mar it, steel is made into pans and kettles of many shapes and sizes. The stamping machine (left) applies the manufacturer's trade-mark to the finished kettle.

to reach the summit from the south. A Japanese came up the northern approach, and two Brazilians appeared on the peak at the same time. However, the report states that "nobody was crowded off the towering pinnacle." On February 4 another ascent was chalked up on Aconcagua's score when five Chileans reported having reached the top.

There are several lower Andes peaks which are more difficult of approach and which continue to defy man. And there are still many tall peaks which have never been climbed.

Two mountains recently conquered are Yerupaja, the famous "Butcher" of the Huayhuash range in Peru; and ice-crowned Fitz Roy, 2,700 miles to the south, in the glacier country along the southern Chile-Argentina border.

Yerupaja, 21,758 feet high, was scaled by the Harvard Andes Expedition of 1950. A French group reached the summit of Fitz Roy early in 1952. Other expeditions are being planned for new assaults on Andean heights, but the supply of peaks is almost unlimited. There are so many mountains still unscaled that, for years to come, climbers will be able to pioneer new territory and name their peaks.

NOTE: The Andes Mountains are shown on the Society's map of South America.

For additional information, see "Peru, Homeland of the Warlike Inca," and "Sky-high Bolivia" (20 color photographs), in *The National Geographic Magazine* for October, 1950; "El Sangay, Fire-breathing Giant of the Andes," January, 1950; "Bolivia—Tin Roof of the Andes," March, 1943; "Chile's Land of Fire and Water," July, 1941; "Air Adventures in Peru," January, 1933; "Flying the Hump of the Andes," May, 1931; and "Volcanoes of Ecuador," January, 1929.

G. EDWARD LEWIS

"THE FLAMING TERROR OF THE ANDES" BREATHES CLOUDS OF SMOKE OVER ECUADOR'S HIGHLANDS

Rising 17,749 feet above sea level from a green sea of páramo grass, El Sangay, one of the most active volcanoes of the long Andes chain, does its forceful best to bar climbers from its snow-frosted summit. Nature helps with violent sleet and snowstorms, although Sangay is only 140 miles south of the Equator. First successful party reached the summit crater in 1929. Since then, bad weather and untimely eruptions have defeated numerous attempts by other expeditions.